

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An internet service provider (~~ISP~~) ~~Virtual Private Network (VPN)~~ virtual private network network comprising:
 - a plurality of edge routers;
 - a plurality of core routers for allowing communication between said the plurality of edge routers;
 - a ~~VPN~~ virtual private network application in communication with a first one of said the plurality of edge routers, ~~said VPN~~ the virtual private network application having a first ~~IP~~ internet protocol address; and
 - a black-hole router in communication with said the plurality of core routers, wherein virtual private network traffic received by the black-hole router is black-holed, said the black-hole router ~~adapted to inject~~ for injecting a second IP address into said ~~ISP VPN~~ the internet service provider virtual private network, said the second ~~IP~~ internet protocol address comprising:
 - a same ~~IP~~ internet protocol address as the first ~~IP~~ internet protocol address;
 - a higher preference value than said the first ~~IP~~ internet protocol address; and
 - a community value such that when said the second ~~IP~~ internet protocol address is injected, a selected first number of edge routers direct ~~VPN~~ virtual private network traffic addressed for said the first ~~IP~~ internet protocol address to said ~~VPN~~ the virtual private network application and a selected second number of edge routers direct ~~VPN~~ virtual private network traffic addressed for said the second ~~IP~~ internet protocol address to said the black-hole router.
2. (Currently Amended) The ~~ISP VPN~~ internet service provider virtual private

network of claim 1, wherein ~~said ISP-VPN~~ the internet service provider virtual private network is a Multiprotocol Label Switching Virtual Private Network (MPLS VPN) multiprotocol label switching virtual private network.

3. (Currently Amended) The ~~ISP-VPN~~ internet service provider virtual private network of claim 1, wherein ~~said~~ the black-hole router injects ~~said~~ the second IP internet protocol address in response to a Distributed Denial of Service (DDoS) distributed denial of service attack on ~~said-VPN~~ the virtual private network application.

4. (Currently Amended) The ~~ISP-VPN~~ internet service provider virtual private network of claim 1, wherein ~~said~~ the community value is changed in real-time by ~~said~~ the black-hole router.

5. (Currently Amended) The ~~ISP-VPN~~ internet service provider virtual private network of claim 1, wherein ~~said ISP-VPN~~ the internet service provider virtual private network utilizes ~~one or more~~ a plurality of dynamic routing protocols in combination with a community-based route filtering to propagate the injected second IP internet protocol address to ~~said~~ the plurality of edge routers.

6. (Currently Amended) The ~~ISP-VPN~~ internet service provider virtual private network of claim 1 wherein when ~~said~~ the selected second number of edge routers directs ~~VPN~~ virtual private network traffic, addressed for ~~said~~ the first IP internet protocol address, to ~~said~~ the black-hole router, ~~said~~ the black-hole router is for receiving such ~~VPN~~ virtual private network traffic as black-holed-traffic, ~~said~~ the black-hole router ~~adapted to analyze~~ for analyzing ~~said~~ the black-holed traffic in order to determine a ratio of attack traffic to legitimate traffic.

7. (Currently Amended) The ~~ISP-VPN~~ internet service provider virtual private network of claim 1, further comprising ~~at least one~~ a route reflector, ~~each one of~~ said at least one the route reflector being connected to a different set of edge

routers from said the plurality of edge routers, ~~said at least one~~ the route reflector for updating said the plurality of edge routers with route instructions, such route instructions including said the injected second IP internet protocol address.

8. (Currently Amended) An internet service provider (ISP) network comprising:

a plurality of edge routers;

an application in direct or indirect electrical communication with a first one of said the plurality of edge routers;

said the application having a first IP internet protocol address such that ~~Virtual Private Network (VPN)~~ virtual private network traffic addressed for said the first IP internet protocol address and entering said ~~ISP~~ the internet service provider network at any one of said the plurality of edge routers, is routed to said the application;

a black-hole router, wherein virtual private network traffic received by the black-hole router is black-holed; and

a router for injecting an instruction into said ~~ISP~~ the internet service provider network, such that ~~one or more a~~ a select edge routers redirect VPN router redirects virtual private network traffic, which is addressed to said the first IP internet protocol address, to said the black-hole router, wherein said the injected instruction comprises a routing instruction having a same IP internet protocol address as said the first IP internet protocol address, but with a higher preference value than said the first IP internet protocol address and having a community value.

9. (Canceled)

10. (Currently Amended) The ~~ISP~~ internet service provider network of claim 8, wherein said ~~ISP~~ the internet service provider network is a ~~Multiprotocol Label Switching (MPLS)~~ VPN multiprotocol label switching virtual private network.

11. (Currently Amended) The ISP internet service provider network of claim 8, wherein ~~said~~ the router and ~~said~~ the black-hole router are the same device.

12. (Currently Amended) The ISP internet service provider network of claim 8, wherein ~~said~~ the injected instruction is a ~~Border Gateway Protocol (BGP)~~ border gateway protocol routing instruction.

13. (Currently Amended) The ISP internet service provider network of claim 8, wherein ~~said~~ the black-hole router is for receiving redirected traffic from ~~said one or more~~ the select edge routers router and to determine a ratio of attack ~~VPN~~ virtual private network traffic to legitimate ~~VPN~~ virtual private network traffic found in ~~said~~ the redirected traffic.

14. (Currently Amended) The ISP internet service provider network of claim 8, wherein ~~said~~ the router injects ~~said~~ the instruction when ~~said~~ the application is experiencing a ~~Distributed Denial of Service (DDoS)~~ distributed denial of service attack.

15. (Currently Amended) A method of managing a ~~Distributed Denial of Service (DDoS)~~ distributed denial of service attack on an application within an internet service provider (ISP) network, ~~said~~ the application having a first IP internet protocol address, ~~said~~ the method comprising:

injecting a ~~Border Gateway Protocol (BGP)~~ border gateway protocol routing instruction into ~~said~~ the ISP internet service provider network when ~~said~~ the ~~DDoS~~ distributed denial of service attack is occurring, ~~said~~ the ~~BGP~~ border gateway protocol routing instruction comprising a second IP internet protocol address having a same IP internet protocol address as ~~said~~ the first IP internet protocol address, but with a higher preference value than ~~said~~ the first IP internet protocol address and having a community value;

redirecting, at ~~one or more~~ a selected edge routers router, ~~VPN~~ virtual private network traffic addressed for ~~said~~ the second IP internet protocol address

to a black-hole router, wherein the virtual private network traffic received by the black-hole router is black-holed; and

directing, at ~~one or more other~~ another edge routers router, VPN virtual private network traffic addressed for ~~said the~~ first IP internet protocol address to ~~said the~~ application that is experiencing ~~said-DDoS~~ the distributed denial of service attack.

16. (Currently Amended) The method of claim 15, wherein ~~said-ISP the~~ internet service provider network is a ~~Multiprotocol Label Switching (MPLS) VPN~~ multiprotocol label switching virtual private network.

17. (Currently Amended) The method of claim 15, further comprising:
receiving, at ~~said the~~ black-hole router, ~~said the~~ redirected VPN virtual private network traffic; and
determining an amount of attack traffic therein.

18. (Currently Amended) The method of claim 15, further comprising changing, in real-time, a number of ~~said one or more~~ selected edge routers that are redirected.

19. (Currently Amended) The method of claim 15, wherein ~~said the~~ injecting ~~said-BGP the border gateway protocol~~ routing instruction into ~~said-ISP the~~ internet service provider network is done by providing ~~said-BGP the border gateway protocol~~ routing instruction to a route-reflector for disseminating ~~said BGP the border gateway protocol~~ routing instruction to other route reflectors within ~~said-ISP the internet service provider~~ network.